

## Lower Pliocene Fan 1 Play

LP F1, #1081

*Textularia* "X"

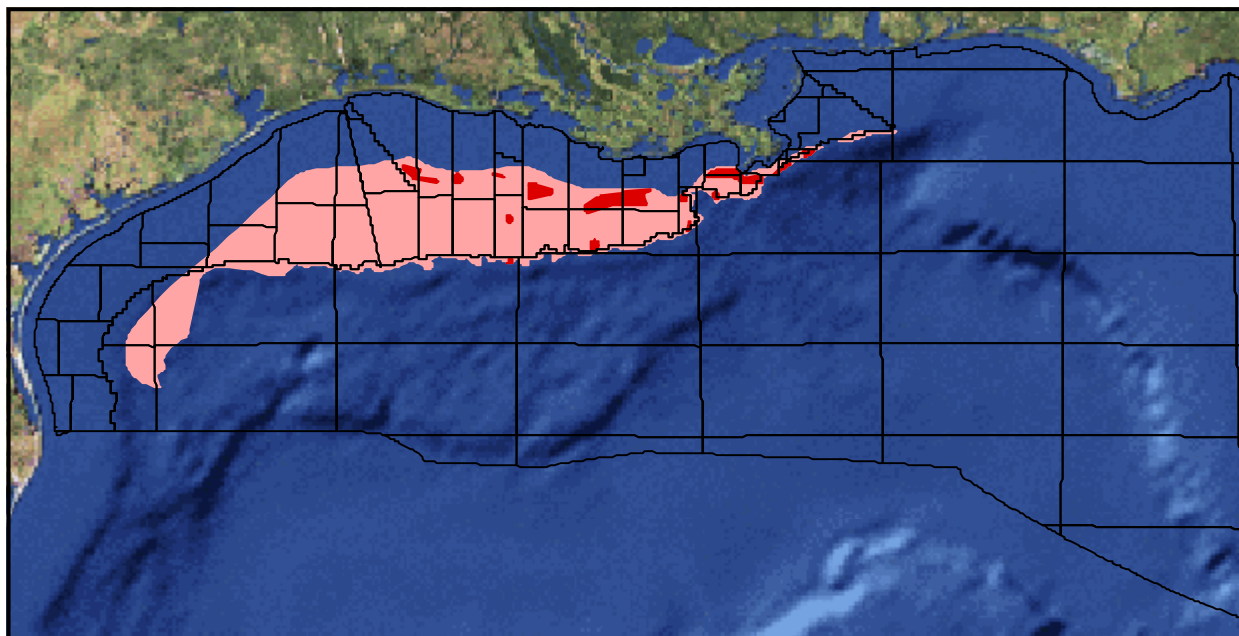


Figure 192. LP F1 map showing location of play. Play limit shown in light red; hydrocarbon limit shown in dark red.

### Overview

The Lower Pliocene Fan 1 Play (LP F1) contains reserves of 928.370 Bcfg and 51.314 MMbo (216.505 MMBOE) in 82 sands in 26 fields. The play extends discontinuously from the Corpus Christi/Port Isabel to Viosca Knoll Area ([Figure 192](#)).

### Description

LP F1 is defined by (1) a deep-sea fan depositional style representing sediments deposited basinward of the LP shelf edge, (2) an extensional structural regime with salt-withdrawal basins and extensive listric, growth faulting rooting into salt detachments on the modern GOM shelf, and (3) the LP Chronozone, the top of which is defined by the *Textularia* "X" biozone ([Figure 8](#)).

LP F1 extends discontinuously from the Corpus Christi/Port Isabel Area offshore Texas, along and updip from the modern GOM shelf edge to the Viosca Knoll Area east of the modern Mississippi River Delta ([Figure 192](#)). Hydrocarbons have been encountered in much of that same area except for two notable areas. First, there are no hydrocarbon

discoveries offshore Texas because of an apparent lack of shelf source sands during LP time. Second, in the offshore Louisiana area, there is a gap in hydrocarbon discoveries across the southern regions of the West Cameron through Grand Isle Areas. This gap represents an area where numerous, allochthonous salt bodies interrupt the deltaic sedimentary section and outlines an area of potential LP subsalt discoveries.

The ancestral Mississippi River Delta System dominated deposition of the play's sediments. The depocenter present in the offshore Texas area no longer received significant amounts of sand-rich sediments during LP time (Morton et al., 1985). As compared with the Upper Upper Miocene (UM3) Chronozone, the shelf edge offshore Louisiana of the LP Chronozone occurs farther out in the GOM Basin because of the basinward progradation of the ancient delta systems.

### Play Limits

The play is bounded by the shelf edge associated with the *Textularia* "X" biozone and grades into the sediments of the Lower Pliocene Progradational

Play (LP P1) in an updip direction. To the northeast, LP F1 deposits grade into the sediments of LP P1 and the Lower Pliocene Fan 2 Play (LP F2). LP F1 does not extend farther to the west or southwest because of an apparent lack of shelf source sands in offshore Texas during LP time. Downdip, LP F1 is limited by LP F2.

## Depositional Style

LP F1 is characterized by deep-sea fan systems deposited basinward of the LP shelf edge. Component facies include channel/levee complexes, sheet-sand lobes, interlobe/fringe sediments, and slump sediments that were deposited on the LP upper and lower slope, in topographically low areas between salt structure highs, and abyssal plain. These deep-sea fan systems are often overlain by thick shale intervals representative of zones of sand bypass on the shelf, or sand-poor zones on the slope.

The LP deep-sea fan interval varies from approximately 100 to more than 4,200 ft in thickness, with net sand thicknesses as much as approximately 1,000 ft. Sand-dominated successions comprising deposits of multiple sheet-sand lobes can be nearly 1,000 ft thick, with intervening shale sequences reaching as much as several thousands of feet in thickness. Thick, upward-coarsening and upward-fining log patterns of sand-dominated intervals represent sheet-sand lobe progradation and channel fill/abandonment, respectively, in proximal-fan areas. Irregularly stratified sand successions displaying spiky log patterns suggest deposition in distal-fan areas.

## Structural Style

Most of the fields in LP F1 are structurally associated with anticlines; salt diapirs—shallow, intermediate, and deep depths—with hydrocarbons trapped on diapir flanks or in sediments draped over diapir tops; and normal faults. A few fields contain hydrocarbon accumulations trapped by permeability barriers and updip pinchouts or facies changes.

## Quantitative Attributes

On the basis of reserves calculations, LP F1 is 76% gas and 24% oil. The 82 sands in the play comprise 132 reservoirs, of which 80 are nonassociated gas, 50 are undersaturated oil, and 2 are saturated oil. All reserves are proved and estimated to

	No. of Sands	Oil (MMbbl)	Gas (Bcf)	BOE (MMbbl)
Proved	82	51.314	928.370	216.505
Cum. production	74	42.539	719.063	170.486
Remaining proved	43	8.776	209.307	46.019
Unproved	0	0.000	0.000	0.000

Table 89. LP F1 reserves and cumulative production.

be 928.370 Bcfg and 51.314 MMbo (216.505 MMBOE) (Table 89). These reserves account for only 5% of the reserves for the LP Chronozone.

Cumulative production from LP F1 totals 719.063 Bcfg and 42.539 MMbo (170.486 MMBOE) from 74 sands in 25 fields. LP F1 production accounts for only 5% of the LP Chronozone's total production. Remaining proved reserves in the play are 209.307 Bcfg and 8.776 MMbo (46.019 MMBOE) in 43 sands in 19 fields.

Table 90 summarizes that water depths of the fields in LP F1 range from 63–635 ft, and play interval discovery depths vary from 8,533–17,162 ft, sub-sea. Additionally, porosity and water saturation range from 20–33% and 16–70%, respectively.

82 Sands	Min	Mean	Max
Water depth (ft)	63	227	635
Subsea depth (ft)	8,533	12,820	17,162
Reservoirs per sand	1	2	7
Porosity	20%	26%	33%
Water saturation	16%	32%	70%

Table 90. LP F1 sand attributes. Values are volume-weighted averages of individual reservoir attributes.

## Exploration History

LP F1 has a 40-year history of discoveries (Figure 193). The first sands in the play were discovered in 1959 and 1960 in the Eugene Island 198 Field. The maximum number of sands discovered in any year occurred in 1982 with 9 sands from three fields. However, the maximum yearly reserves of 40.419 MMBOE were added in 1985 with the discovery of 5 sands from four fields. Sand discoveries have remained fairly consistent throughout the play's history with an average of about 2 per year.

The largest sand in the play was discovered in 1984 in the South Pass 83 Field and is estimated to contain 21.592 MMBOE (Figure 194). The mean sand size for the play is 2.640 MMBOE. Since the first Atlas database cutoff of January 1, 1995, 16 sands have been discovered, the largest of which is estimated to contain 5.698 MMBOE.

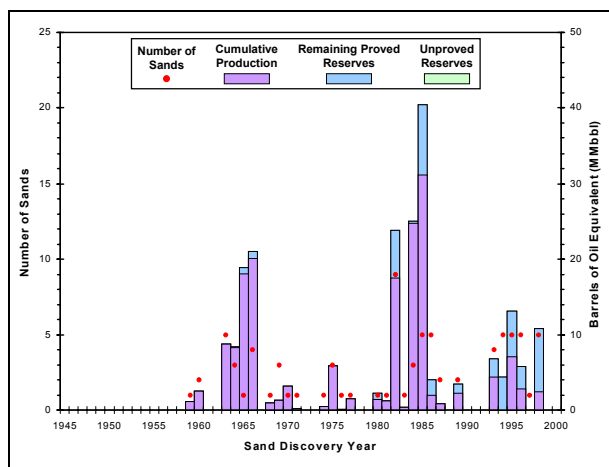


Figure 193. LP F1 exploration history graph showing reserves and number of sands discovered by year.

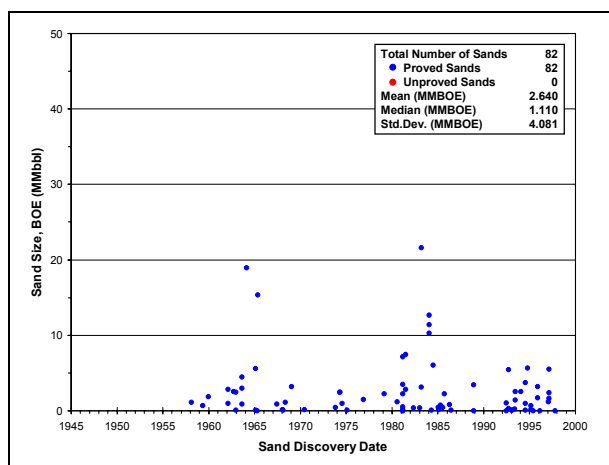


Figure 194. LP F1 sand discovery graph showing the size of sands discovered by year.

## Production History

LP F1 has a 36-year history of production (Figure 195). Oil and gas production curves are very similar, both beginning in 1963. After initial yearly increases through 1968, production values fluctuated erratically. In the late-1980's, the first of two sharp increases occurred, resulting in peak yearly values for both oil and gas. The second sharp increase occurred in the mid-1990's. Since then, oil production has declined, whereas gas production shows an increasing trend.

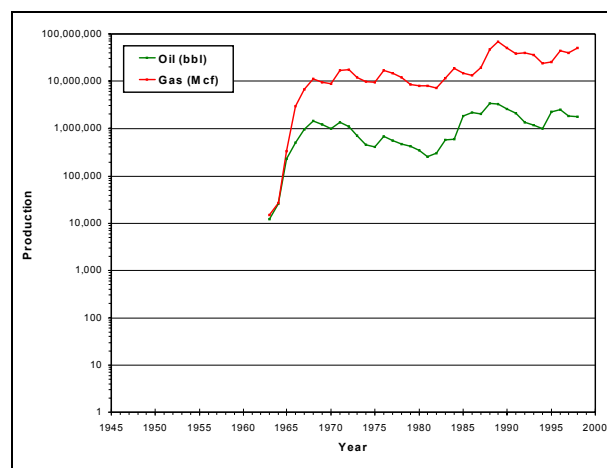


Figure 195. LP F1 production graph showing oil and gas production by year.